

Thermal conductivity measurement of vertically-aligned single-walled carbon nanotubes by 3 omega method

Kei Ishikawa¹, Tae-Youl Choi², Dimos Poulikakos², Erik Einarsson¹, Yoichi Murakami³, Shigeo Maruyama¹

¹ The University of Tokyo, Department of Mechanical Engineering

² ETH Zurich, Institute of Energy Technology

³ Rice University, Dept. of Electrical and Computer Engineering

Contact e-mail: *kei@photon.t.u-tokyo.ac.jp*

Thermal conductivity of single-walled carbon nanotubes expected from molecular dynamics simulations varies between 300~3000 [W/mK]. The quasi-ballistic phonon dominated length-dependence is also discussed [1]. Hence, the reliable experimental measurement of the finite length SWNTs is desired. By using the high-purity vertically aligned single-walled carbon nanotubes [2], the reliable measurement of thermal conductivity can be possible. The 3 omega method commonly used for thin film thermal conductivity measurements, was employed.

References:

[1] S. Maruyama, Physica B, 2002, 323, 193-195.

[2] S. Maruyama, E. Einarsson, Y. Murakami, T. Edamura, Chem. Phys. Lett. 403 (2005) 320.